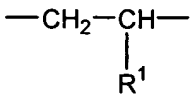
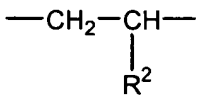
What is claimed is:

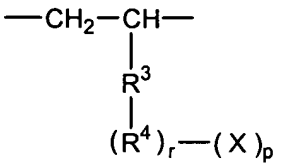
1. A polar group-containing olefin copolymer comprising a constituent unit represented by the following formula (1), a constituent unit represented by the following formula (2) and a constituent unit represented by the following formula (3), having a molecular weight distribution (Mw/Mn) of not more than 3, and having an intensity ratio of Tαβ to Tαα+Tαβ (Tαβ/(Tαα+Tαβ)), as determined from a ^{13}C-NMR spectrum of said copolymer, of not more than 1.0:



...(1)



...(2)



...(3)

wherein R^1 and R^2 may be the same or different and are each a hydrogen atom or a straight-chain or branched aliphatic hydrocarbon group of 1 to 18 carbon atoms; R^3 is a hydrocarbon group; R^4 is a hetero atom or a group containing a hetero atom; r is 0 or 1; X is a polar group selected from an alcoholic hydroxyl group, a phenolic hydroxyl group, a carboxylic acid group, a carboxylic acid ester group, an acid anhydride group,

an amino group, an amide group, an epoxy group and a mercapto group; p is an integer of 1 to 3; and when p is 2 or 3, each X may be the same or different, and in this case, if r is 0, X may be bonded to the same or different atom of R^3, and if r is 1, X may be bonded to the same or different atom of R^4, with the proviso that when R^1 and R^2 are a hydrogen atom or a methyl group, a case wherein R^3 is a straight chain alkylene group of 9 hydrocarbon atoms, r is 0, X is an alcoholic hydroxyl group and p is 1 is not simultaneously satisfied.

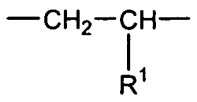
2. The polar group-containing olefin copolymer as claimed in claim 1, wherein R^3 in the constituent unit represented by the formula (3) is a hydrocarbon group of 11 or more carbon atoms.

3. The polar group-containing olefin copolymer as claimed in claim 1, wherein X in the constituent unit represented by the formula (3) is a polar group selected from a phenolic hydroxyl group, a carboxylic acid ester group, an acid anhydride group, an amino group, an amide group, an epoxy group and a mercapto group.

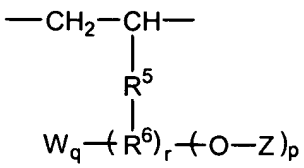
4. The polar group-containing olefin copolymer as claimed in claim 1, wherein R^1 in the constituent unit represented by the formula (1) and R^2 in the constituent unit represented by the formula (2) are each a hydrocarbon group of 2 or more carbon atoms and the crystallinity of said copolymer, as determined by X-ray diffractometry, is not less than 10 %.

5. The polar group-containing olefin copolymer as claimed in claim 1, wherein R^1 in the constituent unit represented by the formula (1) and R^2 in the constituent unit represented by the formula (2) are each a hydrocarbon group of 2 or more carbon atoms and the crystallinity of said copolymer, as determined by X-ray diffractometry, is less than 10 %.

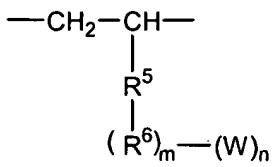
6. A branched type polar group-containing olefin copolymer comprising a constituent unit represented by the following formula (1) and a constituent unit represented by the following formula (4), and optionally a constituent unit represented by the following formula (5), having a molecular weight distribution (Mw/Mn) of not more than 3, and having an intensity ratio of Tαβ to Tαα+Tαβ (Tαβ/(Tαα+Tαβ)), as determined from a ^{13}C-NMR spectrum of said copolymer, of not more than 1.0:



...(1)



...(4)



...(5)

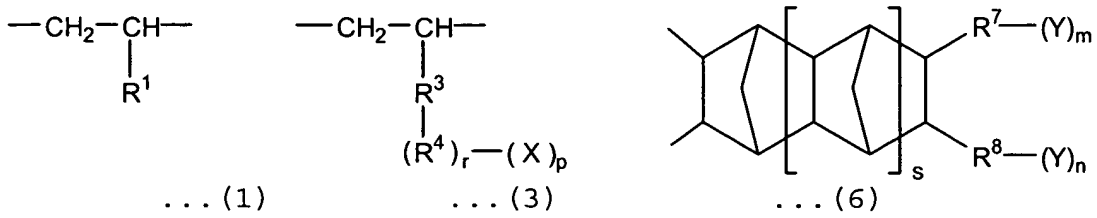
wherein R^1 is a hydrogen atom or a straight-chain or branched aliphatic hydrocarbon group of 1 to 18 carbon atoms; R^5 is a hydrocarbon group; R^6 is a hetero atom or a group containing a hetero atom; r is 0 or 1; Z is a polymer segment obtained by any one of anionic polymerization, ring-opening polymerization and polycondensation; W is a hydroxyl group or an epoxy group; p is an integer of 1 to 3, q is 0, 1 or 2, and $p+q \leq 3$; when p is 2 or 3, each -O-Z may be the same or different, and in this case, if r is 0, -O-Z may be bonded to the same or different atom of R^5, and if r is 1, -O-Z may be bonded to the same or different atom of R^6; when q is 2, each W may be the same or different, and in this case, if r is 0, W may be bonded to the same or different atom of R^5, and if r is 1, W may be bonded to the same or different atom of R^6; in case of $p \geq 1$ and $q \geq 1$, if r is 0, W and -O-Z may be bonded to the same or different atom of R^5, and if r is 1, W and -O-Z may be bonded to the same or different atom of R^6; m is 0 or 1; n is an integer of 1 to 3; and when n is 2 or 3, each W may be the same or different, and in this

case, if m is 0, W may be bonded to the same or different atom of R^6, and if m is 1, W may be bonded to the same or different atom of R^7.

7. The branched type polar group-containing olefin copolymer as claimed in claim 6, wherein, in the formula (4), r is 0 and Z is a polymer segment obtained by anionic polymerization.

8. The branched type polar group-containing olefin copolymer as claimed in claim 6, wherein, in the formula (4), Z is a polymer segment obtained by ring-opening polymerization or polycondensation.

9. A polar group-containing olefin copolymer comprising a constituent unit represented by the following formula (1) and a constituent unit represented by the following formula (6) and, optionally a constituent unit represented by the following formula (3), having a molecular weight distribution (Mw/Mn) of not more than 3, and having an intensity ratio of Tαβ to Tαα+Tαβ (Tαβ/(Tαα+Tαβ)), as determined from a ^{13}C-NMR spectrum of said copolymer, of not more than 1.0:



...(1) ...(3) ...(6)

wherein R^1 is a hydrogen atom or a straight-chain or branched aliphatic hydrocarbon group of 1 to 18 carbon atoms; R^3 is a hydrocarbon group; R^4 is a hetero atom or a group containing a hetero atom; R^7 is a direct bond or an aliphatic hydrocarbon group of 1 or more carbon atoms; R^8 is a hydrogen atom, a direct bond or an aliphatic hydrocarbon group of 1 or more carbon atoms; Y is a polar group containing O and/or N; m and n are each an integer of 0 to 2, and m+n is not 0; s is 0 or 1; r is 0 or 1; X is a polar group selected from an alcoholic hydroxyl group, a phenolic hydroxyl group, a carboxylic acid group, a carboxylic acid ester group, an acid anhydride group, an amino group, an amide group, an epoxy group and a mercapto group; p is an integer of 1 to 3; when p is 2 or 3, each X may be the same or different, and in this case, if r is 0, X may be bonded to the same or different atom of R^3, and if r is 1, X may be bonded to the same or different atom of R^4.

10. A process for preparing a polar group containing olefin copolymer, comprising copolymerizing at least one α-olefin selected from α-olefins of 2 to 20 carbon atoms and at least one polar group-containing monomer selected from a polar group-containing monomer represented by the following formula (7) and a polar group-containing monomer represented by the following formula (8) in the presence of a catalyst comprising:

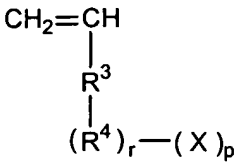
(A) a compound of a transition metal selected from Group 3 (including lanthanoid and actinoid) to Group 10 of the periodic table, and

(B) at least one compound selected from:

(B-1) an organoaluminum oxy-compound,

(B-2) a compound which reacts with the compound (A) to form an ion pair, and

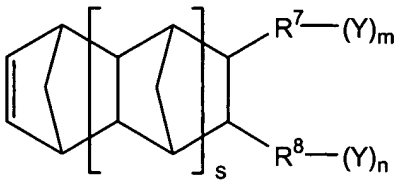
(B-3) an organoaluminum compound;



...(7)

wherein R^3 is a hydrocarbon group; R^4 is a hetero atom or a group containing a hetero atom; r is 0 or 1; X is a polar group selected from an alcoholic hydroxyl group, a phenolic hydroxyl

group, a carboxylic acid group, a carboxylic acid ester group, an acid anhydride group, an amino group, an amide group, an epoxy group and a mercapto group; p is an integer of 1 to 3; when p is 2 or 3, each X may be the same or different, and in this case, if r is 0, X may be bonded to the same or different atom of R^3, and if r is 1, X may be bonded to the same or different atom of R^4;

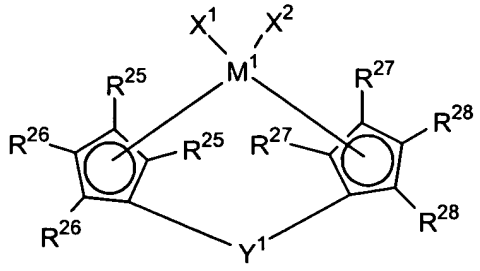


...(8)

wherein R^7 is a direct bond or an aliphatic hydrocarbon group of 1 or more carbon atoms; R^8 is a hydrogen atom, a direct bond or an aliphatic hydrocarbon group of 1 or more carbon atoms; Y is a polar group containing O and/or N; m and n are each an integer of 0 to 2, and m+n is not 0; and s is 0 or 1.

11. The process for preparing a polar group-containing olefin copolymer as claimed in claim 10, wherein the transition metal compound (A) is represented by any one of the following formulas (11), (12), (13), (14), (15) and (16) and the polar

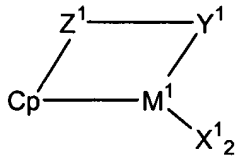
group-containing monomer is a polar group-containing monomer of the formula (7) wherein X is -OH;



...(11)

wherein M^1 is a transition metal atom of Group 4 of the periodic table; R^{25}, R^{26}, R^{27} and R^{28} may be the same or different and are each a hydrogen atom, a nitrogen-containing group, a phosphorus-containing group, a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group or a halogen atom; of the groups indicated by R^{25}, R^{26}, R^{27} and R^{28}, a part of the groups neighboring with each other may be bonded to form a ring together with carbon atoms to which those groups are bonded; X^1 and X^2 may be the same or different and are each a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group, a hydrogen atom or a halogen atom; and Y^1 is a divalent hydrocarbon group of 1 to 20 carbon atoms, a divalent halogenated hydrocarbon group of 1

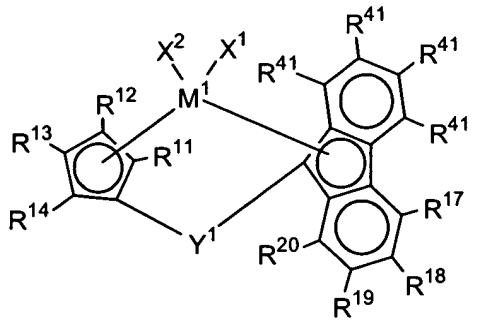
to 20 carbon atoms, a divalent silicon-containing group, a divalent germanium-containing group, a divalent tin-containing group, -O-, -CO-, -S-, -SO-, $-SO_2-$, -Ge-, -Sn-, $-NR^{21}-$, $-P(R^{21})-$, $-P(O)(R^{21})-$, $-BR^{21}-$ or $-AlR^{21}-$ (each R^{21} may be the same or different and is a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, a hydrogen atom, a halogen atom or a nitrogen compound residue in which one or two hydrocarbon groups of 1 to 20 carbon atoms are bonded to the nitrogen atom);



...(12)

wherein M^1 is a transition metal atom selected from Group 4 of the periodic table; Cp is a cyclopentadienyl group or its derivative that is π-bonded to M^1; Z^1 is a ligand containing an oxygen atom, a sulfur atom, a boron atom or an element of Group 14 of the periodic table; Y^1 is a ligand containing an atom selected from a nitrogen atom, a phosphorus atom, an oxygen atom and a sulfur atom; and each X^1 may be the same or different and is a hydrogen atom, a halogen atom, a hydrocarbon group which has 20 or less carbon atoms and may contain 1 or more double

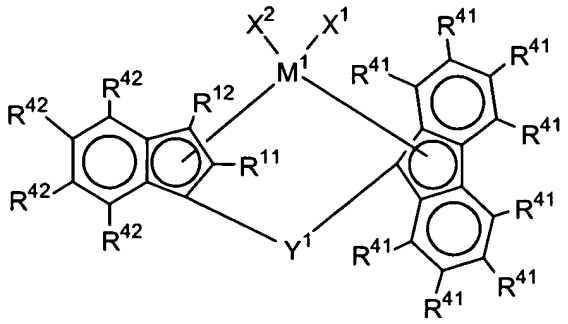
bonds, a silyl group containing 20 or less silicon atoms, a germyl group containing 20 or less germanium atoms or a boronyl group containing 20 or less boron atoms;



...(13)

wherein M^1 is a transition metal atom selected from Group 4 of the periodic table; R^{11} to R^{14}, R^{17} to R^{20}, and R^{41} may be the same or different and are each a hydrocarbon group of 1 to 40 carbon atoms, a halogenated hydrocarbon group of 1 to 40 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group, a halogen atom or a hydrogen atom; of the groups indicated by R^{11}, R^{12}, R^{13}, R^{14}, R^{17}, R^{18}, R^{19}, R^{20} and R^{41}, a part of the groups neighboring with each other may be bonded to form a ring together with carbon atoms to which those groups are bonded (except a case where all of R^{11}, R^{12}, R^{13}, R^{14}, R^{17}, R^{18}, R^{19}, R^{20} and R^{41} are hydrogen atoms and a case where R^{12} or R^{13} is a tert-butyl group and the residual R^{11}, R^{12}, R^{13}, R^{14}, R^{17}, R^{18}, R^{19}, R^{20} and R^{41} are hydrogen atoms); X^1 and X^2 may be the same or different and are each a

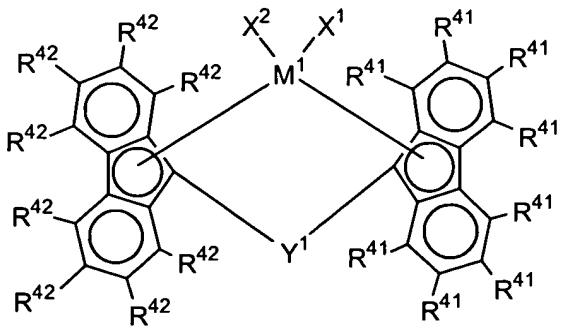
hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group, a hydrogen atom or a halogen atom; and Y^1 is a divalent hydrocarbon group of 1 to 20 carbon atoms, a divalent halogenated hydrocarbon group of 1 to 20 carbon atoms, a divalent silicon-containing group, a divalent germanium-containing group, a divalent tin-containing group, -O-, -CO-, -S-, -SO-, $-SO_2-$, -Ge-, -Sn-, $-NR^{21}-$, $-P(R^{21})-$, $-P(O)(R^{21})-$, $-BR^{21}-$ or $-AlR^{21}-$ (each R^{21} may be the same or different and is a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, a hydrogen atom, a halogen atom or a nitrogen compound residue in which one or two hydrocarbon groups of 1 to 20 carbon atoms are bonded to the nitrogen atom);



...(14)

wherein M^1 is a transition metal atom selected from Group 4 of the periodic table; R^{11}, R^{12}, R^{41} and R^{42} may be the same or different and are each a hydrocarbon group of 1 to 40 carbon atoms, a halogenated hydrocarbon group of 1 to 40 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group, a halogen atom or a hydrogen atom; of the groups indicated by R^{11}, R^{12}, R^{41} and R^{42}, a part of the groups neighboring with each other may be bonded to form a ring together with carbon atoms to which those groups are bonded; X^1 and X^2 may be the same or different and are each a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group, a hydrogen atom or a halogen atom; and Y^1 is a divalent hydrocarbon group of 1 to 20 carbon atoms (when all of R^{11}, R^{12}, R^{41} and R^{42} are hydrogen atoms, Y^1 is not ethylene), a divalent halogenated hydrocarbon group of 1 to 20 carbon atoms, a divalent silicon-containing group, a divalent germanium-containing group, a divalent tin-containing group, -O-, -CO-, -S-, -SO-, $-SO_2-$, -Ge-, -Sn-, $-NR^{21}-$, $-P(R^{21})-$, $-P(O)(R^{21})-$, $-BR^{21}-$ or $-AlR^{21}-$ (each R^{21} may be the same or different and is a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, a hydrogen atom, a halogen atom or a nitrogen compound

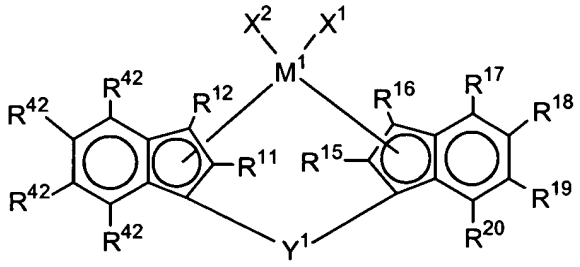
residue in which one or two hydrocarbon groups of 1 to 20 carbon atoms are bonded to the nitrogen atom);



...(15)

wherein M^1 is a transition metal atom selected from Group 4 of the periodic table; R^{41} and R^{42} may be the same or different and are each a hydrocarbon group of 1 to 40 carbon atoms, a halogenated hydrocarbon group of 1 to 40 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group, a halogen atom or a hydrogen atom; of the groups indicated by R^{41} and R^{42}, a part of the groups neighboring with each other may be bonded to form a ring together with carbon atoms to which those groups are bonded; X^1 and X^2 may be the same or different and are each a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group, a hydrogen atom or a halogen atom; and Y^1 is a divalent hydrocarbon group of 1 to

20 carbon atoms, a divalent halogenated hydrocarbon group of 1 to 20 carbon atoms, a divalent silicon-containing group, a divalent germanium-containing group, a divalent tin-containing group, -O-, -CO-, -S-, -SO-, $-SO_2-$, -Ge-, -Sn-, $-NR^{21}-$, $-P(R^{21})-$, $-P(O)(R^{21})-$, $-BR^{21}-$ or $-AlR^{21}-$ (each R^{21} may be the same or different and is a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, a hydrogen atom, a halogen atom or a nitrogen compound residue in which one or two hydrocarbon groups of 1 to 20 carbon atoms are bonded to the nitrogen atom);



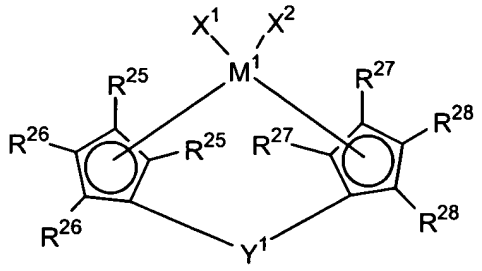
...(16)

wherein M^1 is a transition metal atom selected from Group 4 of the periodic table; R^{11}, R^{12}, R^{15} to R^{20}, and R^{42} may be the same or different and are each a hydrocarbon group of 1 to 40 carbon atoms, a halogenated hydrocarbon group of 1 to 40 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group, a halogen atom or a hydrogen atom; of

the groups indicated by R^{11}, R^{12}, R^{15}, R^{16}, R^{17}, R^{18}, R^{19}, R^{20} and R^{42}, a part of the groups neighboring with each other may be bonded to form a ring together with carbon atoms to which those groups are bonded; X^1 and X^2 may be the same or different and are each a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group, a hydrogen atom or a halogen atom; and Y^1 is a divalent hydrocarbon group of 1 to 20 carbon atoms (when all of R^{11}, R^{12}, R^{15}, R^{16}, R^{17}, R^{18}, R^{19}, R^{20} and R^{42} are hydrogen atoms, Y^1 is not ethylene), a divalent halogenated hydrocarbon group of 1 to 20 carbon atoms, a divalent silicon-containing group, a divalent germanium-containing group, a divalent tin-containing group, -O-, -CO-, -S-, -SO-, $-SO_2-$, -Ge-, -Sn-, $-NR^{21}-$, $-P(R^{21})-$, $-P(O)(R^{21})-$, $-BR^{21}-$ or $-AlR^{21}-$ (each R^{21} may be the same or different and is a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, a hydrogen atom, a halogen atom or a nitrogen compound residue in which one or two hydrocarbon groups of 1 to 20 carbon atoms are bonded to the nitrogen atom).

12. The process for preparing a polar group-containing olefin copolymer as claimed in claim 10, wherein the transition

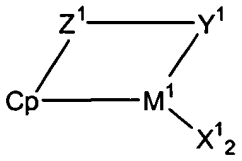
metal compound (A) is represented by any one of the following formulas (11), (12), (13), (14), (15) and (16) and the polar group-containing monomer is a polar group-containing monomer of the formula (7) wherein X is -NR'R" (R' and R" may be the same or different and are each a hydrogen atom or an alkyl group);



...(11)

wherein M^1 is a transition metal atom of Group 4 of the periodic table; R^{25}, R^{26}, R^{27} and R^{28} may be the same or different and are each a hydrogen atom, a nitrogen-containing group, a phosphorus-containing group, a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group or a halogen atom; of the groups indicated by R^{25}, R^{26}, R^{27} and R^{28}, a part of the groups neighboring with each other may be bonded to form a ring together with carbon atoms to which those groups are bonded; X^1 and X^2 may be the same or different and are each a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group, a sulfur-

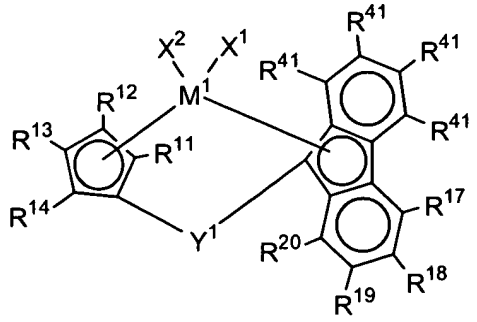
containing group, a silicon-containing group, a hydrogen atom or a halogen atom; and Y^1 is a divalent hydrocarbon group of 1 to 20 carbon atoms, a divalent halogenated hydrocarbon group of 1 to 20 carbon atoms, a divalent silicon-containing group, a divalent germanium-containing group, a divalent tin-containing group, -O-, -CO-, -S-, -SO-, $-SO_2-$, -Ge-, -Sn-, $-NR^{21}-$, $-P(R^{21})-$, $-P(O)(R^{21})-$, $-BR^{21}-$ or $-AlR^{21}-$ (each R^{21} may be the same or different and is a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, a hydrogen atom, a halogen atom or a nitrogen compound residue in which one or two hydrocarbon groups of 1 to 20 carbon atoms are bonded to the nitrogen atom);



...(12)

wherein M^1 is a transition metal atom selected from Group 4 of the periodic table; Cp is a cyclopentadienyl group or its derivative that is π-bonded to M^1; Z^1 is a ligand containing an oxygen atom, a sulfur atom, a boron atom or an element of Group 14 of the periodic table; Y^1 is a ligand containing an atom selected from a nitrogen atom, a phosphorus atom, an oxygen atom and a sulfur atom; and each X^1 may be the same or different and

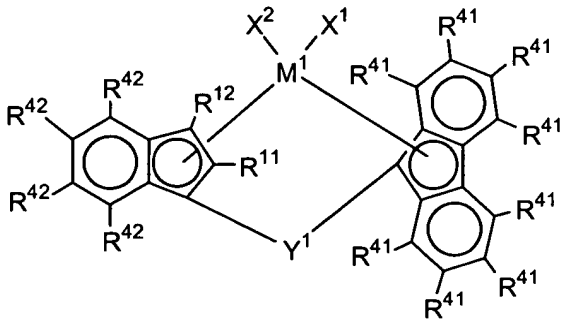
is a hydrogen atom, a halogen atom, a hydrocarbon group which has 20 or less carbon atoms and may contain 1 or more double bonds, a silyl group containing 20 or less silicon atoms, a germyl group containing 20 or less germanium atoms or a boronyl group containing 20 or less boron atoms;



...(13)

wherein M^1 is a transition metal atom selected from Group 4 of the periodic table; R^{11} to R^{14}, R^{17} to R^{20}, and R^{41} may be the same or different and are each a hydrocarbon group of 1 to 40 carbon atoms, a halogenated hydrocarbon group of 1 to 40 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group, a halogen atom or a hydrogen atom; of the groups indicated by R^{11}, R^{12}, R^{13}, R^{14}, R^{17}, R^{18}, R^{19}, R^{20} and R^{41}, a part of the groups neighboring with each other may be bonded to form a ring together with carbon atoms to which those groups are bonded (except a case where all of R^{11}, R^{12}, R^{13}, R^{14}, R^{17}, R^{18}, R^{19}, R^{20} and R^{41} are hydrogen atoms and a case where R^{12} or R^{13} is a tert-butyl group and the residual R^{11},

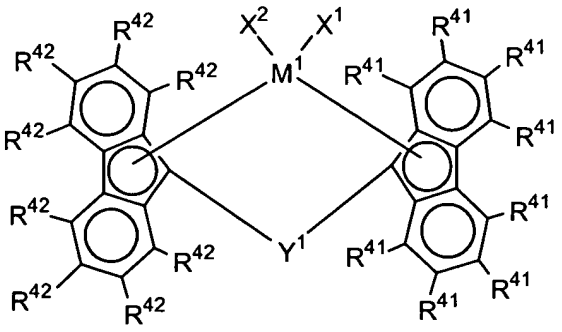
R^{12}, R^{13}, R^{14}, R^{17}, R^{18}, R^{19}, R^{20} and R^{41} are hydrogen atoms); X^1 and X^2 may be the same or different and are each a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group, a hydrogen atom or a halogen atom; and Y^1 is a divalent hydrocarbon group of 1 to 20 carbon atoms, a divalent halogenated hydrocarbon group of 1 to 20 carbon atoms, a divalent silicon-containing group, a divalent germanium-containing group, a divalent tin-containing group, -O-, -CO-, -S-, -SO-, -SO_2-, -Ge-, -Sn-, -NR^{21}-, -$P(R^{21})$-, -$P(O)(R^{21})$-, -BR^{21}- or -AlR^{21}- (each R^{21} may be the same or different and is a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, a hydrogen atom, a halogen atom or a nitrogen compound residue in which one or two hydrocarbon groups of 1 to 20 carbon atoms are bonded to the nitrogen atom);



...(14)

wherein M^1 is a transition metal atom selected from Group 4 of the periodic table; R^{11}, R^{12}, R^{41} and R^{42} may be the same or different and are each a hydrocarbon group of 1 to 40 carbon atoms, a halogenated hydrocarbon group of 1 to 40 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group, a halogen atom or a hydrogen atom; of the groups indicated by R^{11}, R^{12}, R^{41} and R^{42}, a part of the groups neighboring with each other may be bonded to form a ring together with carbon atoms to which those groups are bonded; X^1 and X^2 may be the same or different and are each a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group, a hydrogen atom or a halogen atom; and Y^1 is a divalent hydrocarbon group of 1 to 20 carbon atoms (when all of R^{11}, R^{12}, R^{41} and R^{42} are hydrogen atoms, Y^1 is not ethylene), a divalent halogenated hydrocarbon group of 1 to 20 carbon atoms, a divalent silicon-containing group, a divalent germanium-containing group, a divalent tin-containing group, -O-, -CO-, -S-, -SO-, $-SO_2-$, -Ge-, -Sn-, $-NR^{21}-$, $-P(R^{21})-$, $-P(O)(R^{21})-$, $-BR^{21}-$ or $-AlR^{21}-$ (each R^{21} may be the same or different and is a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, a hydrogen atom, a halogen atom or a nitrogen compound

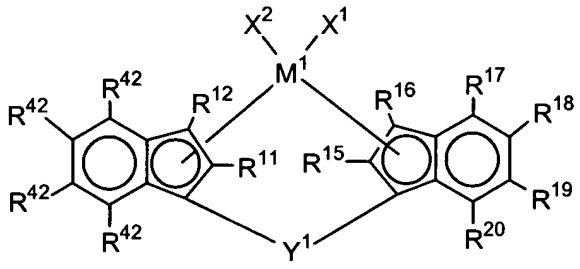
residue in which one or two hydrocarbon groups of 1 to 20 carbon atoms are bonded to the nitrogen atom);



...(15)

wherein M^1 is a transition metal atom selected from Group 4 of the periodic table; R^{41} and R^{42} may be the same or different and are each a hydrocarbon group of 1 to 40 carbon atoms, a halogenated hydrocarbon group of 1 to 40 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group, a halogen atom or a hydrogen atom; of the groups indicated by R^{41} and R^{42}, a part of the groups neighboring with each other may be bonded to form a ring together with carbon atoms to which those groups are bonded; X^1 and X^2 may be the same or different and are each a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group, a hydrogen atom or a halogen atom; and Y^1 is a divalent hydrocarbon group of 1 to

20 carbon atoms, a divalent halogenated hydrocarbon group of 1 to 20 carbon atoms, a divalent silicon-containing group, a divalent germanium-containing group, a divalent tin-containing group, -O-, -CO-, -S-, -SO-, $-SO_2-$, -Ge-, -Sn-, $-NR^{21}-$, $-P(R^{21})-$, $-P(O)(R^{21})-$, $-BR^{21}-$ or $-AlR^{21}-$ (each R^{21} may be the same or different and is a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, a hydrogen atom, a halogen atom or a nitrogen compound residue in which one or two hydrocarbon groups of 1 to 20 carbon atoms are bonded to the nitrogen atom);



...(16)

wherein M^1 is a transition metal atom selected from Group 4 of the periodic table; R^{11}, R^{12}, R^{15} to R^{20}, and R^{42} may be the same or different and are each a hydrocarbon group of 1 to 40 carbon atoms, a halogenated hydrocarbon group of 1 to 40 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group, a halogen atom or a hydrogen atom; of the groups indicated by R^{11}, R^{12}, R^{15}, R^{16}, R^{17}, R^{18}, R^{19}, R^{20}

and R^{42}, a part of the groups neighboring with each other may be bonded to form a ring together with carbon atoms to which those groups are bonded; X^1 and X^2 may be the same or different and are each a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, an oxygen-containing group, a sulfur-containing group, a silicon-containing group, a hydrogen atom or a halogen atom; and Y^1 is a divalent hydrocarbon group of 1 to 20 carbon atoms (when all of R^{11}, R^{12}, R^{15}, R^{16}, R^{17}, R^{18}, R^{19}, R^{20} and R^{42} are hydrogen atoms, Y^1 is not ethylene), a divalent halogenated hydrocarbon group of 1 to 20 carbon atoms, a divalent silicon-containing group, a divalent germanium-containing group, a divalent tin-containing group, -O-, -CO-, -S-, -SO-, $-SO_2-$, -Ge-, -Sn-, $-NR^{21}-$, $-P(R^{21})-$, $-P(O)(R^{21})-$, $-BR^{21}-$ or $-AlR^{21}-$ (each R^{21} may be the same or different and is a hydrocarbon group of 1 to 20 carbon atoms, a halogenated hydrocarbon group of 1 to 20 carbon atoms, a hydrogen atom, a halogen atom or a nitrogen compound residue in which one or two hydrocarbon groups of 1 to 20 carbon atoms are bonded to the nitrogen atom).

13. A process for preparing a polar group-containing olefin copolymer, comprising copolymerizing at least one α-olefin selected from α-olefins of 2 to 20 carbon atoms and at

least one polar group-containing monomer selected from a polar group-containing monomer represented by the following formula (7), a polar group-containing monomer represented by the following formula (8) and a macromonomer represented by the following formula (9) in the presence of a catalyst comprising:

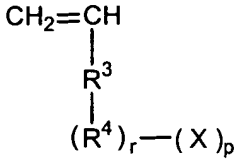
(A) a compound of a transition metal selected from Group 3 (including lanthanoid and actinoid) to Group 10 of the periodic table, and

(B) at least one compound selected from:

(B-1) an organoaluminum oxy-compound,

(B-2) a compound which reacts with the compound (A) to form an ion pair, and

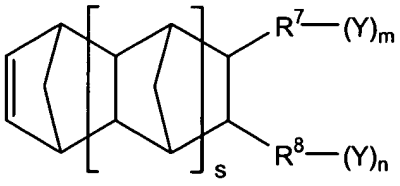
(B-3) an organoaluminum compound;



...(7)

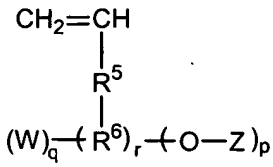
wherein R^3 is a hydrocarbon group; R^4 is a hetero atom or a group containing a hetero atom; r is 0 or 1; X is -OR, -COOR, -CRO, $-C(O)NR_2$, -C(O)R (R is a hydrogen atom or a hydrocarbon group), an epoxy group, -C≡N or -NR'R" (R' and R" may be the same or different and are each a hydrogen atom or an alkyl group); p is an integer of 1 to 3; and when p is 2 or 3, each X

may be the same or different, and in this case, if r is 0, X may be bonded to the same or different atom of R^3, and if r is 1, X may be bonded to the same or different atom of R^4;



...(8)

wherein R^7 is a direct bond or an aliphatic hydrocarbon group of 1 or more carbon atoms; R^8 is a hydrogen atom, a direct bond or an aliphatic hydrocarbon group of 1 or more carbon atoms; Y is -OR, -COOR, -CRO, $-C(O)NR_2$, -C(O)R (R is a hydrogen atom or a hydrocarbon group), an epoxy group, -C≡N or -NR'R" (R' and R" may be the same or different and are each a hydrogen atom or an alkyl group); m and n are each an integer of 0 to 2, and m+n is not 0; and s is 0 or 1;



...(9)

wherein R^5 is a hydrocarbon group; R^6 is a hetero atom or a group containing a hetero atom; r is 0 or 1; Z is a polymer segment obtained by any one of anionic polymerization, ring-

opening polymerization and polycondensation; W is a hydroxyl group or an epoxy group; p is an integer of 1 to 3, q is 0, 1 or 2, and $p+q \leq 3$; when p is 2 or 3, each -O-Z may be the same or different, and in this case, if r is 0, -O-Z may be bonded to the same or different atom of R^5, and if r is 1, -O-Z may be bonded to the same or different atom of R^6; when q is 2, each W may be the same or different, and in this case, if r is 0, W may be bonded to the same or different atom of R^5, and if r is 1, W may be bonded to the same or different atom of R^6; and in case of $p \geq 1$ and $q \geq 1$, if r is 0, W and -O-Z may be each bonded to the same or different atom of R^5, and if r is 1, W and -O-Z may be each bonded to the same or different atom of R^6.

14. A process for preparing a branched type polar group-containing olefin copolymer, comprising copolymerizing at least one α-olefin selected from α-olefins of 2 to 20 carbon atoms, a polar group-containing monomer represented by the following formula (10), and optionally, a polar group-containing monomer represented by the following formula (8) in the presence of a catalyst comprising:

(A) a compound of a transition metal selected from Group 3 (including lanthanoid and actinoid) to Group 10 of the periodic table, and

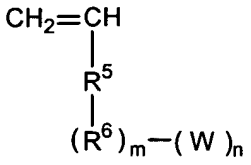
(B) at least one compound selected from:

(B-1) an organoaluminum oxy-compound,

(B-2) a compound which reacts with the compound (A) to form an ion pair, and

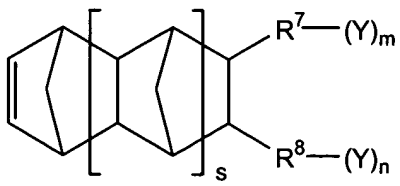
(B-3) an organoaluminum compound,

and then conducting any one of the following steps (i) and (ii);



...(10)

wherein R^5 is a hydrocarbon group; R^6 is a hetero atom or a group containing a hetero atom; m is 0 or 1; W is a hydroxyl group or an epoxy group; n is an integer of 1 to 3; and when n is 2 or 3, each W may be the same or different, and in this case, if m is 0, W may be bonded to the same or different atom of R^5, and if m is 1, W may be bonded to the same or different atom of R^6;



...(8)

wherein R^7 is a direct bond or an aliphatic hydrocarbon group of 1 or more carbon atoms; R^8 is a hydrogen atom, a direct bond or an aliphatic hydrocarbon group of 1 or more carbon atoms; Y is -OR, -COOR, -CRO, $-C(O)NR_2$, -C(O)R (R is a hydrogen atom or a hydrocarbon group), an epoxy group, -C≡N or -NR'R" (R' and R" may be the same or different and are each a hydrogen atom or an alkyl group); m and n are each an integer of 0 to 2, and m+n is not 0; and s is 0 or 1;

(i) from the W portion of the copolymerized polar group-containing monomer, a Z portion is formed by anionic polymerization, ring-opening polymerization or polycondensation;

(ii) the W portion of the copolymerized polar group-containing monomer is reacted with a terminal functional group of a polymer obtained by anionic polymerization, ring-opening polymerization and polycondensation.

15. A thermoplastic resin composition containing the polar group-containing olefin copolymer of claim 1, 6 or 9.

16. An adhesive resin comprising the polar group-containing olefin copolymer of claim 1, 6 or 9.

17. A compatibilizing agent comprising the polar group-containing olefin copolymer of claim 1, 6 or 9.

18. A resin modifier comprising the polar group-containing olefin copolymer of claim 1, 6 or 9.

19. A filler dispersant comprising the polar group-containing olefin copolymer of claim 1, 6 or 9.

20. A dispersion comprising the polar group-containing olefin copolymer of claim 1, 6 or 9.

21. A film or a sheet comprising the polar group-containing olefin copolymer of claim 1, 6 or 9.

22. An adhesive resin comprising the thermoplastic resin composition of claim 15.

23. A compatibilizing agent comprising the thermoplastic resin composition of claim 15.

24. A resin modifier comprising the thermoplastic resin composition of claim 15.

25. A filler dispersant comprising the thermoplastic resin composition of claim 15.

26. A dispersion comprising the thermoplastic resin composition of claim 15.

27. A film or a sheet comprising the thermoplastic resin composition of claim 15.